

AMENDMENTS TO THE CLAIMS:

Please cancel Claims 11 and 12-26, amend Claims 1 and 10 and add new Claims 27-30 as follows:

1. (Amended) An ultrasonic transducer, comprising:

an ultrasonic sensor having a plurality of transducer elements formed on a first wafer component; and

an integrated circuit formed on a second wafer component, ~~the said second~~ wafer component including a plurality of cavities defining a plurality of posts such that the cavities are configured and dimensioned to alter the acoustic impedance of ~~the said~~ second wafer component in a predefined manner, and wherein the integrated circuit is joined to the ultrasonic sensor on said first wafer component and wherein each of the elements of the ultrasonic sensor is located over ~~one of a respective one of the plurality of posts and~~ a respective one of the plurality of cavities.

2. (Original) The transducer of claim 1, wherein the ultrasonic sensor comprises piezoelectric ceramic material.

3. (Original) The transducer of claim 1, wherein the ultrasonic sensor comprises a micro-machined ultrasonic transducer (MUT).

4. (Previously Canceled)

5. (Previously Canceled)

6. (Original) The transducer of claim 1, wherein the cavities reduce acoustic energy traveling laterally in the wafer.

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7. (Original) The transducer of claim 1, wherein the wafer is silicon.
8. (Original) The transducer of claim 1, wherein the wafer is germanium.
9. (Original) The transducer of claim 1, wherein the cavities are designed to allow the acoustic impedance of the wafer to match the acoustic impedance of the transducer elements.
10. (Amended) The transducer of claim 1, wherein the cavities are configured and dimensioned in a predetermined manner for the purpose of altering the acoustic impedance of the wafer to increase the effective bandwidth of the transducer elements.
11. (Canceled) The transducer of claim 1, wherein the wafer further comprises:
a first wafer component including the plurality of cavities; and
a second wafer component bonded to the first wafer component.
- 12-26. (Canceled)
27. (New) An ultrasonic transducer, comprising:
an ultrasonic sensor having a plurality of transducer elements formed on a first wafer component; and
an integrated circuit formed on a second wafer component, said second wafer component including a plurality of cavities containing one of a vacuum and a gas defining a plurality of posts such that said cavities are configured and dimensioned to alter the acoustic impedance of said second wafer component in a predefined manner, and wherein said integrated circuit is joined to said first wafer component and wherein each said transducer element is located over one of a respective one of said plurality of posts and a respective one of said plurality of cavities.

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28. (New) The transducer of claim 27, wherein said plurality of transducer elements are selected from the group consisting of: a piezoelectric ceramic material and a micro-machined ultrasonic transducer (MUT).

29. (New) The transducer of claim 27, wherein the cavities are designed to allow the acoustic impedance of the wafer to match the acoustic impedance of the transducer elements.

30. (New) The transducer of claim 27, wherein the cavities are configured and dimensioned in a predetermined manner for the purpose of altering the acoustic impedance of the wafer to increase the effective bandwidth of the transducer elements.
